STATEMENT OF BASIS FOR MODIFICATION OF POST-CLOSURE CARE HAZARDOUS WASTE PERMIT TO IMPLEMENT CORRECTIVE ACTION

INGERSOLL RAND COMPANY-CLINTON SITE
CLINTON, LAURENS COUNTY, SOUTH CAROLINA
SCD 003 345 683

PURPOSE OF THE STATEMENT OF BASIS

This Statement of Basis has been prepared to inform the public and provide an opportunity to comment on the proposed modifications to the post-closure care hazardous waste permit for the Ingersoll Rand Company Site in Clinton, SC. The Ingersoll Rand Company Site is located at 1775 Torrington Road, Clinton, South Carolina 29325 having the facility identification number SCD 003 345 683. The proposed permit modifications consist of implementing a final corrective measure for the Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) located beneath and adjoining the former manufacturing building of the Site that was demolished in 2014. The "footprint" of the former manufacturing facility, including the SWMUs and AOCs that are the subject of this Statement of Basis, is referred to as "Inside the Manufacturing Building".

The February 16, 2018, Corrective Measures Study (CMS) Report evaluated several corrective action alternatives for "Inside the Manufacturing Building". The South Carolina Department of Health and Environmental Control (DHEC) has selected a preferred corrective action alternative that includes the following: Targeted Groundwater Extraction, Soil Vapor Extraction, Monitored Natural Attenuation, Groundwater Monitoring, and Land Use Controls. DHEC has determined that the proposed corrective action should be sufficient to protect human health and the environment. However, prior to final approval of the proposed corrective action and proposed changes to the groundwater monitoring program, the public has an opportunity to comment on the proposed permit modification. At any time during the public comment period, the public may comment as described in the "How Do You Participate?" section. Upon closure of the public comment period, DHEC will evaluate all comments and questions and determine whether there is a need to modify the proposed corrective action and/or the groundwater monitoring program.

HOW DO YOU PARTICIPATE?

DHEC solicits public review and comment prior to approval of the proposed corrective action for "Inside the Manufacturing Building". The public comment period for the proposed corrective action will begin on June 12, 2018, and will end on August 10, 2018.

The Statement of Basis and the documents associated with the investigations and corrective actions proposed for the site will be available to the public for review during regular business hours, Monday through Friday, except legal holidays at the following locations:

SC DHEC
Upstate EA Region Office
1736 South Main Street
Greenwood, SC 29646
864-227-5915

SC DHEC
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

Any comments on the proposed corrective action and/or requests for a public hearing should be sent to:

David Scaturo, P.G., P.E., Director
Division of Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201
Phone (803) 898-0290
Email: scaturdm@dhec.sc.gov

Citizens may request a formal public meeting to learn more about the facility, the Statement of Basis, and draft modified permit during the public comment period.

Written comments or requests for a public meeting must be submitted no later than August 10, 2018, at which time the public comment period will end.

FACILITY DESCRIPTION

The Ingersoll Rand Company-Clinton Site is located approximately 2.5 miles northwest of the City of Clinton in Laurens County, South Carolina. The former manufacturing facility at the Ingersoll Rand Company-Clinton Site was constructed by the Torrington Company, a subsidiary of Ingersoll Rand, in 1960 to manufacture roller bearings. Torrington manufactured bearings at the facility until it was purchased by Timken US, LLC (Timken) in 2003. Timken continued manufacturing bearings at the facility from 2003 until the end of 2007, at which time, Timken ceased operations and all manufacturing equipment, raw materials, chemicals, and fuels related to the facility were removed from the site. In 2014, Timken demolished all above-grade structures that had been associated with the manufacturing operations. Timken retained ownership of the property until 2016, when Ingersoll Rand acquired the property from Timken.

Past electroplating operations at the former manufacturing facility generated a waste stream containing copper-cyanide wastewater, wastewater with large amounts of fluoride and metals sludges that contained cadmium, chromium, nickel, copper, lead and cyanide. The initial wastewater treatment operation at the former facility used a series of seven units consisting of five surface impoundments, a sludge drying bed unit, and a landfill to manage, treat, and dispose of the electroplating waste stream. The wastewaters and associated sludges managed in the seven units were classified as hazardous wastes.

These seven hazardous waste management units were closed between 1983 and 1988 by removing the liquid wastes, stabilizing the sludges, and capping the units with a low permeability cover. A post-closure care hazardous waste permit is required due to waste left in place during closure of the seven units and due to groundwater impacts emanating from the basins. The first post-closure care permit was issued to the Torrington Company in July 1988. DHEC reissued permits to the facility in 1996 and 2013. The draft modified permit requires Ingersoll Rand to continue conducting post-closure care of the seven former hazardous waste management units. Post-closure care consists of groundwater monitoring and corrective action for groundwater contamination around these units. The draft modified permit also requires Ingersoll Rand to continue maintaining the engineered covers over the seven units and maintaining institutional controls (security fencing, deed restrictions, etc.) to prevent disturbance of the seven units.

Additional areas of the facility are subject to the permit as solid waste management units (SWMUs) and areas of concern (AOCs) which may have released hazardous constituents to the environment. Fifty-one SWMUs and AOCs have been identified at the facility.

DHEC has determined that thirty-one of the fifty-one SWMUs and AOCs do not require any investigation or corrective action. The current permit requires the operation of a corrective action system for releases of volatile organic compounds (VOCs) and metals from fourteen SWMUs which are located in a portion of the site designated “Outside the Manufacturing Building”. The corrective action system approved for “Outside the Manufacturing Building” consists of a groundwater pump and treat system and an air sparging/soil vapor extraction (AS/SVE) system. After removing significant amounts of contaminants, DHEC approved replacing the AS/SVE system with the operation of an additional well (R-19) in the pump and treat system.

The remaining five SWMUs and one AOC are located beneath and adjoining the former manufacturing building that was demolished in 2014. This group of five SWMUs and one AOC are designated in the permit as “Inside the Manufacturing Building” and includes the following:

- AOC No. 1- former cyanide plating area
- SWMU 51- former underground storage (UST) area
- SWMU 14- former coolant treatment system
- SWMU 16- former UST and Freon release area
- SWMU 17- cutting oil release area
- SWMU 7- former facility piping that carried hazardous waste beneath Building

This Statement of Basis describes the final corrective measure for “Inside the Manufacturing Building”

INSIDE THE MANUFACTURING BUILDING

History

The five SWMUs and AOC 1 listed above were areas where hazardous constituents were released to groundwater as a result of the manufacture of roller bearings from 1960 to the end of 2007 (see attached Figure). The initial investigation of these areas required by the permit (Phase 1) occurred in 2007 prior to the demolition of the manufacturing building. Based on the results of the Phase 1, a Phase 2 investigation began in 2010 to assess the nature and extent of the hazardous constituents released to soil and groundwater. Phase 2 investigation activities continued over the course of the next 7 years, ultimately resulting in the submission of a Corrective Measures Study (CMS) which evaluated remedial alternatives for “Inside the Manufacturing Building”.

Soils associated with the SWMUs and AOCs were analyzed for VOCs, semi-volatile organic compounds (SVOCs), and metals. The primary hazardous constituent identified in the soil samples was trichloroethene (TCE) with the highest TCE concentrations observed in the eastern portion of AOC-1 (2,390,000 ug/kg maximum). High concentrations of TCE (42,400 ug/kg maximum) were also detected in soil samples from an area near SWMUs 14, 16, and 17 and are believed to be associated with releases from a former aboveground storage tank that was located in that area. Lower concentrations of TCE were detected in the northern portion of SWMU 7.

Metals were also detected in the soil beneath the former manufacturing building with cyanide, copper, cobalt and to a lesser extent, chromium, representing the primary detections. The areas of elevated metals are primarily associated with AOC-1 and generally occur in the upper 10 feet of the soil profile. Based on the distribution of the observed soil concentrations, the potential for inorganics to impact groundwater is low.

TCE is the primary constituent detected in groundwater related to releases from the SWMUs and the AOC. Historical operations in all five SWMUs and AOC 1 are the source of the groundwater contamination beneath the manufacturing building. TCE has been detected as high as 25,000 micrograms per liter (ug/l) in an AOC-1 monitoring well, and at a concentration of 6,250 ug/L in a monitoring well associated with SWMUs 14, 16 and 17. Volatile organic compounds, primarily dichloroethene, were detected in groundwater samples collected from temporary wells installed in SWMU 51 during the Phase 2 investigation.

The Phase 1 and Phase 2 investigations have provided a delineation of the groundwater plume that originates from “Inside the Manufacturing Building”. The groundwater plume covers the entire central and southern portion of the former manufacturing building and extends beyond the limits of the former building toward the south. Groundwater contamination from “Inside the Manufacturing Building” has likely migrated approximately 1000 feet to the line of groundwater recovery wells located

along the southern boundary of the Site. These recovery wells are designed to prevent the migration of groundwater contamination past the property boundary.

Metals were not detected above regulatory standards in the Phase 2 groundwater samples with the exception of cobalt. However, the distribution of cobalt detections in groundwater was sporadic and not characteristic of a contaminant plume. Additional data was collected on cobalt in May 2018 by sampling monitoring wells located downgradient of “Inside the Manufacturing Building”. During the final design of the selected remedy in June and July of 2018, a final determination will be made by DHEC whether cobalt should be a contaminant of concern in groundwater and further action is warranted.

Proposed Corrective Action

The selected remedy consists of the following: Targeted Groundwater Extraction, Soil Vapor Extraction (SVE), Monitored Natural Attenuation, Groundwater Monitoring, and Land Use Controls. The selected remedy will remove VOC contamination from soil and groundwater, provide long-term groundwater monitoring, and set restrictions on groundwater and land use.

The overall goal of the targeted groundwater extraction will be to address the areas of highest VOC concentrations in groundwater located in the vicinity of AOC-1. Groundwater will be recovered from two new extraction wells and will be routed to the existing groundwater treatment system. Although included as an official component of corrective action for the area “Outside the Manufacturing Building, the line of extraction wells at the southern property boundary will also function to contain and capture the migration of VOCs in groundwater from source areas located “Inside the Manufacturing Building” toward the south and southwest. Groundwater recovery wells currently in operation near the main manufacturing building (R-13 and R-16) will continue to operate.

Contaminated groundwater originating from SWMU-51 will be extracted using recovery wells that are part of the groundwater extraction and treatment system approved in the permit for “Outside the Manufacturing Building” (R-17, R-18, and R-19).

The selected remedy will also include a SVE component, utilized at the site to target residual VOCs in the soils within AOC 1, SWMUs 14, 16, 17, and the northern section of SWMU 7. The use of SVE at select areas will contribute to a reduced timeframe needed to attain cleanup standards for groundwater and reduce the hazards associated with residual soil impacts. The SVE remedy will be implemented using a phased approach via a mobile system, focusing on the most contaminated areas within AOC-1 and SWMUs 14, 16, 17, and 7.

The selected remedy includes groundwater monitoring designed to monitor the effectiveness of the corrective action and to verify the ability of natural processes (natural attenuation) to reduce VOC concentrations outside the targeted groundwater extraction zone within AOC-1.

Land Use Controls will be implemented for “Inside the Manufacturing Building” as part of the overall Land Use Control Management Plan for the Site. The Land Use Controls will be imposed to prevent access to the portions of the Site where potential hazards remain, restrict groundwater use at the Site, and prohibit disturbances to soils at contaminated areas without appropriate approval and oversight by DHEC.

PUBLIC PARTICIPATION

To facilitate public participation in the corrective action process at the site, the following actions have been taken:

- A local information Repository has been established at the DHEC Environmental Affairs Region Office in Greenwood, SC.

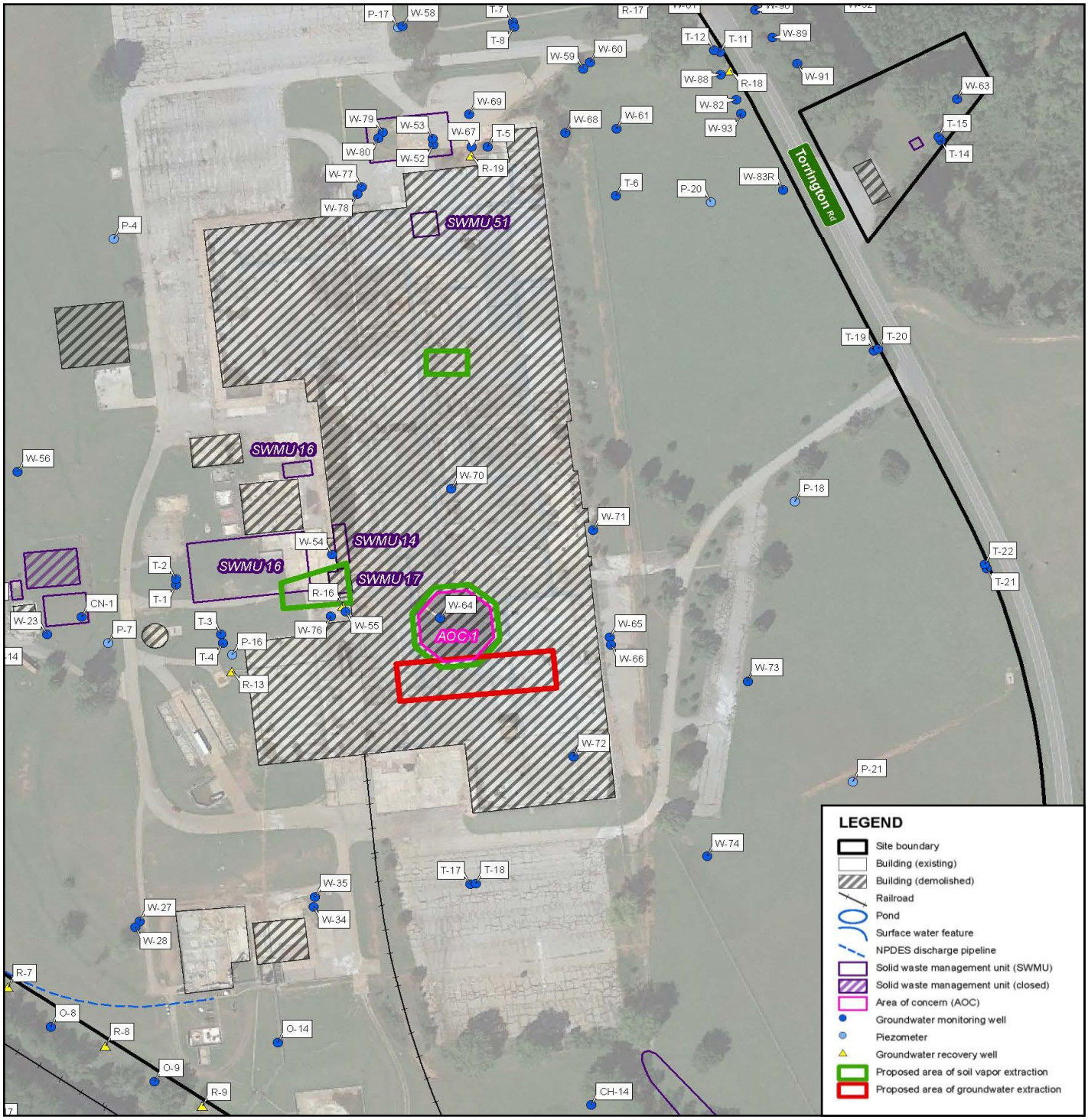
- A Public Notice, Fact Sheet, and Statement of Basis have been developed; and

- A mailing list has been prepared for distribution of the Public Notice.

- The Public Notice, Statement of Basis, Fact Sheet, draft modified permit, and other documents related to the site have been placed on the public notice page of the DHEC website.

NEXT STEPS

Following consideration of public comments by the SC DHEC, a revised Final Decision and Response to Comments (FDRTC) accepting or rejecting the proposed corrective action will be issued.



Location of SWMUs and AOCs "Inside the Manufacturing Building"

Note: (1) Location of the former manufacturing building is shaded in gray. (2) SWMU 7 is a network of pipes that carried hazardous material and hazardous waste beneath the building. (3) Figure is taken from the 2018 Corrective Measures Study (CMS) Report-Revision 1 "Inside the Manufacturing Building" prepared by Arcadis U.S. Inc.